IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:			
	JAMES E. PRICER	Group Art No.	**2172**
Serial No.:	**09/779,866**		
Filed:	**February 8, 2001**	Examiner:	**BAO TRAN TO**
For:	**ANALYZING ASSOCIATIONS IN THE ORDER OF TRANSACTIONS**	Attorney Docket No.:	**9517**

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

APPELLANT'S SUBSTITUTE APPEAL BRIEF (37 C.F.R. § 41.37)

This brief is submitted in response to the Notification of Non-Compliant Appeal Brief mailed September 22, 2006 and in support of Appellant's notice of appeal from the decision dated October 20, 2004 of the Examiner.

REAL PARTY IN INTEREST

The real party in interest is:

NCR Corporation
1700 S. Patterson Blvd
Dayton, Ohio 45479

by virtue of an assignment by the inventors as duly recorded in the Assignment Branch of the U.S. Patent and Trademark Office.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences, to Applicants' knowledge.

STATUS OF CLAIMS

The application as originally filed contained 27 claims. Claim 21 and 25 were previously canceled. Claims 1-20, 22-24, 26, and 27 are pending. Claims 1-20, 22-24, 26, and 27 are appealed.

STATUS OF AMENDMENTS

No amendment has been filed subsequent to final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1 features a method for use in analyzing associations in the order of transactions. The method includes loading data from the transactions into a database system. Page 9, Line 8-Page 10, Line 17; Fig. 5, elements 500-515; Fig. 6, elements 600-635; Page 15, Line 13-Page 16, Line 5; Fig. 10, element 1000; Fig. 11, elements 1100-1150. The data includes an entry for each transaction and the transactions are grouped into sessions. Page 8, Line 13-Page 10, Line 16; Page 15, Line 13-Page 16, Line 5; Fig. 10, element 1005; Fig. 11, elements 1130-1145. The method includes ordering the transactions within each session (Page 10, Line 22-Page 11, Line 35; Fig. 5, element 505; Fig. 6, elements 610-630; Page 16, Lines 6-13; Fig. 10, element 1010; Fig. 11, elements 1135-1145) and performing an analysis of the sessions of transactions to find associations in the order of the transactions in the session. Page 12, Line 1 - Page 15, Line 12; Page 16, Lines 20-25, Fig. 10, element 1015; Fig. 11, element 1150; Fig. 12, elements 1140, 1150.

Claim 14 features a method for use in analyzing associations in the order of transactions. The method includes loading data from the transactions into a database system, where the data includes an entry for each transaction and where loading the data includes grouping the transactions into sessions. Page 9, Line 8-Page 10, Line 17; Fig. 5, elements 500-515; Fig. 6, elements 600-635; Page 15, Line 13-Page 16, Line 5; Fig. 10, element 1000; Fig. 11, elements 1100-1150. The method includes selecting sessions of transactions belonging to the same group

and corresponding to a single session (Page 8, Line 13-Page 10, Line 16; Page 15, Line 13-Page 16, Line 5; Fig. 10, element 1005; Fig. 11, elements 1130-1145), ordering the transactions within each session (Page 10, Line 22-Page 11, Line 35; Fig. 5, element 505; Fig. 6, elements 610-630; Page 16, Lines 6-13; Fig. 10, element 1010; Fig. 11, elements 1135-1145), and performing an analysis of the sessions of transactions to find associations in the order of the transactions in the sessions. Page 12, Line 1 - Page 15, Line 12; Page 16, Lines 20-25, Fig. 10, element 1015; Fig. 11, element 1150; Fig. 12, elements 1140, 1150.

Claim 20, features a computer program, stored on a tangible storage medium, for use in analyzing associations in the order of electronically stored transactions. Page 9, Line 8-Page 10, Line 17; Fig. 5, elements 500-515; Fig. 6, elements 600-635; Page 15, Line 13-Page 16, Line 5; Fig. 10, element 1000; Fig. 11, elements 1100-1150. The program includes executable instructions that cause a computer to load data from the transactions into a database system. The data includes an entry for each transaction and the transactions are grouped into sessions. Page 8, Line 13-Page 10, Line 16, Fig. 5, elements 500-515; Fig. 6, elements 600-635, Page 15, Line 13-Page 16, Line 5, Figs. 10 and 11. The computer program further includes executable instructions that cause the computer to order the transactions within each session (Page 10, Line 22-Page 11, Line 35, Figs. 5-7, Page 16, Lines 6-13, Figs. 10 and 11) and perform an analysis of the groups of transactions to find associations in the order of the transactions in the sessions. Page 12, Line 1 - Page 15, Line 12, Page 16, Lines 20-25, Figs. 10-13.

Claim 24 features a database system for use in analyzing associations in the order of transactions. Page 9, Line 8-Page 10, Line 17; Fig. 5, elements 500-515; Fig. 6, elements 600-635, Page 15, Line 13-Page 16, Line 5, Fig. 2, elements $150_{1..N}$, 205-235; Fig. 5, element 500, Fig. 10, element 1000, Fig. 11, elements 1100-1150. The database system includes a massively parallel processing system, which includes one or more nodes and a plurality of CPUs. Page 7, Lines 31-36; Fig. 2, elements $205_{1..N}$, $215_{1..N}$, $220_{1..N}$. Each of the one or more nodes provides access to one or more CPUs. Page 7, Lines 34-36, Fig. 2. The database system further includes a plurality of virtual processes. Page 7, Lines 34-36, Fig. 2, elements $205_{1..N}$, $215_{1..N}$, $220_{1..N}$. Each of the one or more CPUs provides access to one or more virtual processes. Page 7, Lines 34-36, Fig. 2, elements $205_{1..N}$, $215_{1..N}$, $220_{1..N}$. Each virtual process is configured to manage data stored in one of a plurality of data-storage facilities. Page 7, Lines 36-37, Fig. 2, elements

$205_{1..N}$, $215_{1..N}$, $220_{1..N}$. The database system further includes a parsing engine configured to parse transaction data and store the parsed transaction data in a table that is distributed across two or more data-storage facilities. Page 8, Lines 6-10, Fig. 2, element 225. The data includes an entry for each transaction and the transactions are grouped into sessions. Page 8, Line 13-Page 10, Line 16, Fig. 5, elements 500-515; Fig. 6, elements 600-635, Page 15, Line 13-Page 16, Line 5, Figs. 10 and 11. The database system includes a database-management component configured to operate on the table to order the transactions within each session (Page 10, Line 22-Page 11, Line 35, Figs. 5-7, Page 16, Lines 6-13, Figs. 10 and 11), and perform an analysis of the groups of transactions to find associations in the order of the transactions in the sessions. Page 12, Line 1 - Page 15, Line 12, Page 16, Lines 20-25, Figs. 10-13.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-20, 22-24, 26, and 27 are anticipated under 35 USC § 102(e) by U.S. Patent No. 6,430,539 to Lazarus, *et al.* (Lazarus) or rendered obvious in light of Lazarus in combination with Patent Application Serial No. WO00/20998 by Miller, *et al* (Miller).

ARGUMENT

A. Lazarus does not anticipate or render obvious claims 1-20, 22-24, and 26 because Lazarus does not disclose that transactions are grouped into sessions.

In the Final Office Action dated October 20, 2005 (hereinafter, the Final Office Action) in this matter, the Examiner rejected independent claims 1, 14, and 20 under 35 USC § 102(e) as being anticipated by Lazarus. The Examiner rejected independent claim 24 as obvious under 35 USC § 103(a) in view of Lazarus and Miller.

Claim 1 requires "loading data from the transactions into a database system, where the data include an entry for each transaction **and the transactions are grouped into sessions**." Claim 14 requires "**selecting sessions of transactions of transactions belonging to the same group and corresponding to a single session**." Claim 20 requires "[a] computer program . . . comprising executable instructions that cause a computer to load data from the transactions into a database system, where the data includes an entry for each transaction and **the transactions are grouped into sessions**." Likewise, claim 24 requires that "**the transactions are grouped into sessions**." As the specification states, "[i]t may be useful to associate transactions with individual customer 'sessions' in order to allow a meaningful analysis of the transactions." Specification, Page 2, lines 1-2.

In the Response to Arguments section, with respect to claims 1 and 20, the Examiner argued that, "Lazarus explicitly discloses that the transaction as [sic] grouped into sessions, based on time of purchase. (col 28, lines 25-40)." Final Office Action, Page 2. In the Claim Rejection section, with respect to claims 1 and 20 the Examiner cited column 3, lines 25-35 to show that, in Lazarus, "the transactions are grouped into sessions." Final Office Action, Page 4. With respect to the relevant limitation in claim 14, the Examiner cited column 3, lines 25-35. With respect to the relevant limitation in claim 24, the Examiner cited column 3, lines 25-35 and column 15 lines 55-60. The cited portions of Lazarus discuss:

> In a preferred embodiment, the analysis of consumer spending uses spending data, such as credit card statements, and processes that data to identify co-occurrences of purchases **within defined co-occurrence windows**, which may be based on either a number of transactions, a time interval, or other sequence related criteria. Each merchant is associated with vector representation; the initial vectors for all of the merchants are randomized to present a quasi-orthogonal set of vectors in a

> merchant vector space. Each consumer's transaction data reflecting their purchases (e.g. credit card statements, bank statements, and the like) is chronologically organized to reflect the general order in which purchases were made at the merchants. Analysis of each consumer's transaction data in various co-occurrence windows identifies which merchants co-occur.

Lazarus, Column 3, Lines 27-41

The cited portions of Lazarus do not discuss transactions that are grouped into sessions, as required by the independent claims. An example of determining which transactions are part of a session is illustrated in U.S. Patent Application 2002/0143925 A1 by Pricer, *et al.*, which is cited in the present Application on page 2, lines 4-7.

> After parsing the Web-log data and extracting the desired information, the DBMS identifies all Web-log entries associated with an individual user session (step 315). One technique for doing so involves identifying all entries that **list a single user-ID code and then selecting from these the entries with date-and-time stamps that differ by less than some prescribed amount**.

U.S. Patent Application 2002/0143925 A1, Page 2, ¶¶ 14-15.

A person of ordinary skill in the art at the time the present application was filed would understand that transactions are grouped into sessions based on user activity or inactivity: so long as a user makes a Web-log log entry without a lag between entries greater than a prescribed amount of time, the session will continue. Lazarus does not recognize sessions of this type. Instead, Lazarus deals with purchases within "a number of transactions, a time interval, or other sequence related criteria," which are not sessions, but are instead arbitrary divisions of time, transactions or other factors. Lazarus, Column 3, Lines 30-32. Therefore, Lazarus does not disclose grouping the transactions into sessions.

Each of the dependant claims 2-13, 15-19, 21-24, and 27 depend from one of claims 1, 14, 20, or 24 and include one of the limitations discussed above.

Anticipation can be established only when every element of the claim is disclosed by a single prior art reference. MPEP 2131; *RCA Corp. v. Applied Digital Data Systems, Inc*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). The rejection of claims 1-4, 6, 14-20, and 22 under 35 USC 102(e) should be reversed because Lazarus does not disclose grouping the

transactions into sessions.

There is no prima facie case of obviousness where the asserted combination lacks at least one element. MPEP 2143; *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1443 (Fed. Cir. 1991). The rejection of claims 5, 7-13, 23-24, and 26-27 under 103(a) should be reversed because Lazarus does not disclose grouping the transactions into sessions.

B. Lazarus does not anticipate or render obvious claims 1-20, 22-24, 26, and 26 because Lazarus does not disclose performing an analysis of the sequence of transactions to find associations in the sequence of transaction in the session, as required by claims 1-12, 14-27, 29-43, 45-51, and 53.

Claims 1 and 14 require "performing an analysis of the sessions of transaction **to find associations in the sequence of the transactions in the sessions**." Claim 20 requires the computer program to "perform an analysis of the session of transactions **to find associations in the sequence of the transactions in the session**." Claim 24 requires a database-management component to "perform an analysis of the sessions of transactions **to find associations in the sequence of the transactions in the sessions.**" This analysis "produces affinity data relating to the order that transactions occur." Specification, Page 12, Lines 6-7. "For example, a web page owner may be interested to know that a customer that clicks on a first image on the web page followed by a second image may be more likely to make a purchase than a customer that clicks on the second image before the first image." Specification, Page 2, Lines 8-12. The Specification further states:

> Associations are relationships between the occurrences of one or more items, sometimes called the "antecedent" or "left-hand-side," in a group of transactions and the occurrences of a different set of one or more items, sometimes called the "consequent" or "right-hand-side," in the same group of transactions. For example, if item A occurs in the first transaction (ITEM_ID="A1") and item B occurs in the second transaction (ITEM-ID="B2") in a large number of groups of transactions, then the association between ITEM-IDs A1 and B2 might be considered significant. In this case, an analyst trying to guide a customer to perform the action corresponding to ITEM_ID B might first guide the customer to perform the action corresponding to ITEM_ID A.
>
> Associations can occur among two or more ordered items. For example, when considering four ordered items, the combinations of ordered items for which associations can be computed include $1 \rightarrow 1$, $2 \rightarrow 1$, $2 \rightarrow 2$, or $3 \rightarrow 1$, where the "$\rightarrow$" symbol is read "implies" and refers to an association between the ordered item on the left side of the symbol and the ordered item or items on the right side of the symbol.

Specification, Page 12, Lines 10-24.

The Examiner, in the Response to Arguments section, stated "Lazarus explicitly discloses that session analysis enables the system to determine which transactions are likely to occur together (col 10, lines 65-col 11, line 4)." Final Office Action, Page 3. In the Claim Rejection section, the Examiner cites column 4, lines 45-50 and column 5, lines 15-25 and 50-55 as disclosing this limitation for claim 1, 20, and 24. Final Office Action, Pages 4 and 10. The Examiner cites column 5, lines 15-25 and 50-55 as disclosing this limitation for claim 14. Final Office Action, Page 10.

The cited portions of Lazarus discuss "determinin[ing] which transactions are likely to occur together," as the Examiner states. Finding "which transaction are likely to occur together" is not the same thing as determining associations in the **sequence** of the transactions, as the independent claims require. To continue the web page example from above, if the web page owner only analyzed the co-occurrence of the two clicks, the customer who clicked on the second image before the first image could not be distinguished from the customer who clicked on the first image before the second image. Therefore, the passages cited by the examiner do not disclose determining associations in the sequence of the transactions.

Each of the dependant claims 2-13, 15-19, 21-24, and 27 depend from one of claims 1, 14, 20, or 24 and include one of the limitations discussed above.

Anticipation can be established only when every element of the claim is disclosed by a single prior art reference. MPEP 2131; *RCA Corp. v. Applied Digital Data Systems, Inc*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). The rejection of claims 1-4, 6, 14-20, and 22 under 35 USC 102(e) should be reversed because Lazarus does not disclose grouping the transactions into sessions.

There is no prima facie case of obviousness where the asserted combination lacks at least one element. MPEP 2143; *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1443 (Fed. Cir. 1991). The rejection of claims 5, 7-13, 23-24, and 26-27 under 103(a) should be reversed because Lazarus does not disclose grouping the transactions into sessions.

Summary

In light of the foregoing, Applicant respectfully requests that the final rejection of the pending claims should be reversed and the application be remanded for allowance of the pending claims, or, alternatively, remand the application for further examination if appropriate references can be found by the examiner.

Applicant submits that no fee is due with the filing of this New Appeal Brief. Should any fees be required, Applicant requests that the fees be debited from deposit account number 14-0225, Order Number 9823.

Respectfully submitted,

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Date: October 23, 2006

CLAIMS APPENDIX

1. A method for use in analyzing associations in the sequence of transactions, the method comprising

loading data from the transactions into a database system, where the data includes an entry for each transaction and the transactions are grouped into sessions ;

ordering the transactions in sequence within each session; and

performing an analysis of the sessions of transactions to find associations in the sequence of the transactions in the sessions.

2. The method of claim 1 wherein the data for each transaction includes a time stamp related to a time that the transaction occurred and wherein ordering the transactions comprises

numbering the transactions based on the time stamps included in the data for the transactions.

3. The method of claim 2 wherein numbering the transactions comprises

numbering the transactions in sequence from the transaction having the earliest time stamp to the transaction having the latest time stamp.

4. The method of claim 1 wherein loading the data from the transactions into the database system comprises

parsing the data for each transaction into fields in the database system; and

identifying one of the fields as a session identifier field where a session identifier for each transaction is stored.

5. The method of claim 4 wherein loading the data from the transactions into the database system further comprises

identifying one of the fields as an item identifier field where an item identifier for each transaction is stored.

6. The method of claim 1 wherein performing the analysis comprises performing an affinity analysis.

7. The method of claim 1 wherein loading data from the transactions into the database system comprises

parsing the transaction data into fields in a base table in the database system;

identifying one of the fields as a session identifier field where a session identifier for each transaction is stored;

identifying one of the fields as an item identifier field where an item identifier for each transaction is stored;

ordering the transactions in each session of transactions in sequence comprises concatenating a sequence number to the item identifier for each transaction to create a concatenated sequence number;

performing the analysis comprises

building one or more support tables for one or more item identifiers with **the** concatenated sequence number; and

calculating support, confidence and lift by joining the support tables.

8. The method of claim 7 wherein building the one or more support tables comprises

counting the transactions containing various combinations of item identifiers with concatenated sequence number and dividing the count by a total number of sessions to obtain a support for each of the combinations.

9. The method of claim 7 wherein building the one or more support tables comprises

for each item identifier with concatenated sequence number, counting the transactions containing the same item identifier with concatenated sequence number and computing the support by dividing the count by a total number of sessions and storing the item identifier with concatenated sequence number and the support in a first support table.

10. The method of claim 9 wherein building the one or more support tables further comprises

building a second base table by selecting transactions from the first base table that include an item identifier corresponding to an item identifier and concatenated sequence number having a support more than a predetermined value.

11. The method of claim 10 wherein building the one or more support tables further comprises

counting the transactions in the second base table containing various combinations of item identifiers with concatenated sequence number and dividing the count by a total number of sessions in the second base table to obtain a support for each of the combinations.

12. The method of claim 10 wherein building the one or more support tables further comprises

counting the transactions in the second base table containing combinations of two specified item identifiers with concatenated sequence number and dividing the count by a total number of transactions in the second base table to obtain a support for each of the combinations; and

storing the item identifiers and computed support in a two item support table.

13. The method of claim 10 wherein building the one or more support tables further comprises

counting the transactions in the second base table containing combinations of N specified item identifiers with concatenated sequence number and dividing the count by a total number of transactions in the second base table to obtain a support for each of the combinations; and

storing the item identifiers and computed support in an N item support table.

14. A method for use in analyzing associations in the order of transactions, the method comprising

loading data from the transactions into a database system, where the data includes an entry for each transaction and wherein loading the data comprises grouping the transactions into groups;

selecting sessions of transactions belonging to the same group and corresponding to a single session;

ordering the transactions in sequence within each session; and

performing an analysis of the sessions of transactions to find associations in the sequence- of the transactions in the sessions.

15. The method of claim 14 wherein each entry includes a time stamp related to a time that the transaction occurred and selecting comprises

selecting entries with time stamps lying in a predetermined range.

16. The method of claim 15 wherein ordering comprises

numbering the selected entries based on their respective time stamps.

17. The method of claim 16 wherein numbering comprises

numbering the selected entries from the earliest to the latest.

18. The method of claim 16 wherein numbering comprises

numbering the selected entries from the latest to the earliest.

19. The method of claim 16 wherein numbering comprises

numbering the selected entries based on their respective distance in time from a reference time.

20. A computer program, stored on a tangible storage medium, for use in analyzing associations in the sequence of electronically stored transactions, the program comprising executable instructions that cause a computer to

load data from the transactions into a database system, where the data includes an entry for each transaction and the transactions are grouped into sessions;

order the transactions in sequence within each session; and

perform an analysis of the sessions of transactions to find associations in the sequence of the transactions in the sessions.

21. The computer program of claim 20 where each entry includes a time stamp related to a time that the transaction occurred and where, in selecting sessions, the computer

selects entries with time stamps lying in a predetermined range.

23. The computer program of claim 20 where, in loading data from the transactions, the computer

parses the transaction data into fields in a base table in the database system;

identifies one of the fields as a session identifier field where a session-identifier for each transaction is stored;

identifies one of the fields as an item identifier field where an item identifier for each transaction is stored;

in ordering the transactions in each session of transactions, the computer

concatenates a sequence number to the item identifier for each transaction; and

in performing the analysis, the computer

builds one or more support tables for one or more item identifiers with concatenated sequence number; and

calculates support, confidence and lift by joining the support tables.

24. A database system for use in analyzing associations in the order of transactions, the database system comprising

a massively parallel processing system comprising

one or more nodes;

a plurality of CPUs, each of the one or more nodes providing access to one or more CPUs;

a plurality of virtual processes each of the one or more CPUs providing access to one or more virtual processes;

each virtual process configured to manage data stored in one of a plurality of data-storage facilities;

a parsing engine configured to parse transaction data and store the parsed transaction data in a table that is distributed across two or more data-storage facilities, where the data includes an entry for each transaction and the transactions are grouped into sessions;

a database-management component configured to operate on the table to

order the transactions in sequence within each session; and

perform an analysis of the sessions of transactions to find associations in the sequence of the transactions in the sessions.

25. The database system of claim 24 where each entry includes a time stamp related to a time that the transaction occurred and where, in selecting sessions, the database management system is configured to

select entries with time stamps lying in a predetermined range.

27. The database system of claim 24 where, in loading data from the transactions, the database management system is configured to

parse the transaction data into fields in a base table in the database system;

identify one of the fields as a session identifier field where a session identifier for each transaction is stored;

identify one of the fields as an item identifier field where an item identifier for each transaction is stored;

order the transactions in each session of transactions in sequence comprises concatenating a sequence number to the item identifier for each transaction; and

in performing the analysis, the database management system is configured to

build one or more support tables for one or more item identifiers with concatenated sequence number; and

calculate support, confidence and lift by joining the support tables.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE